

Exhibit Y - Expert Reports of Jeffrey Wells

REPORT: An analysis of expert opinions offered by entomologists for The State of Nevada vs.
Kirstin Blaise LOBATO

Jeffrey D. Wells, Ph.D.
February 8, 2021

I was asked to analyze the forensic entomology expert opinions and other statements offered for the defense in The State of Nevada vs. Kirstin Blaise Lobato. In preparation for this task I examined a variety of electronic files provided to me by the law firm of Marquis Aurbach Coffing. Of those files, my analysis was based on the following.

- A report by Dr. Gail Anderson, dated 17 December 2009.
- A report by Dr. Linda-Lou O'Connor, dated February 11, 2010.
- An email from Dr. M. Lee Goff, dated 12 March 2010.
- Transcripts of an evidentiary hearing (Case No. C-01-177394) from October 10-12, 2017.

In addition, I reviewed the scientific literature on forensic entomological knowledge central to this case and have cited the most relevant publications in this report.

Multiple forensic entomologists offered an opinion concerning the time of day Duran Bailey was killed. In this document I demonstrate that a key foundation of those opinions, that blow flies will always or almost always immediately find and lay eggs on a corpse or animal carcass when conditions are favorable, is contradicted by the scientific literature. A second related generalization about carrion insects, that the presence of blood or wounds make a corpse more attractive to blow flies, is similarly contradicted by published experiments. A third related generalization, that a blow fly can detect and find a corpse or animal carcass from a great distance, lacks supporting evidence.

Two of the experts testified concerning their experience observing carrion insects in the Mojave Desert. However, based on the details in the court transcript and the scientific literature, that experience would provide no insight into the time required for a blow fly to locate and deposit eggs on a corpse in Las Vegas, NV.

THE ENTOMOLOGICAL REPORTS BY DRS. GAIL S. ANDERSON, M. LEE GOFF, AND LINDA-LOU O'CONNOR.

The statements by Drs. Goff and O'Connor do not disagree with or add to the more comprehensive analysis by Dr. Anderson. All overstate the extent to which we can be sure, to quote page 2 of Dr. Anderson's report, "Insects colonize remains very shortly after death occurs ..."

Rapid insect colonization following death or initial exposure of a human corpse or animal carcass has been observed many times. However, this is not universal, even when the

environmental conditions favor insect activity. Lothe (1964), a forensic pathologist, reported that the assumption of immediate deposition of insect eggs or larvae based on data from northern Europe was not true in the tropical environment of Uganda. Furthermore, Lothe described several examples in which a human corpse attracted large numbers of blow flies, but they did not lay eggs on a corpse even when the victim had been dead for two or three days.

Several published experiments with animal carcasses similarly demonstrated that blow flies did not immediately visit or deposit eggs on carrion even when environmental conditions appeared to be suitable for insect flight and location of the carrion. Two examples relevant to the expert testimony in *The State of Nevada vs. Kirstin Blaise Lobato* are summarized here.

Mohr and Tomberlin (2015), exposed to the open air large (132-176 lb.) freshly dead pigs starting at 08:45 am near College Station, TX. Two of their experimental trials were during a summer period of hot dry weather. During their Trial 1 (August) ambient temperatures during the first day of exposure varied from about 82-97°F, and **the minimum amount of time between initial carcasses exposure and the arrival of the first female blow fly was 9 hours.** During their Trial 2 (September) ambient temperatures during the first day of exposure varied from about 75-91°F, and **the minimum amount of time between initial carcasses exposure and the arrival of the first female blow fly was 4 hours.** Mohr and Tomberlin did not record fly egg-laying behavior, only the presence of adult female flies. Therefore, the amount of time elapsed until the first eggs were laid could not have been less than the values above, but it could have been greater than those time periods.

Moophayak et al. (2017, one of the authors was Dr. Jeffery Tomberlin) exposed to the open air freshly killed and plucked 2.9-3.7 lb. chickens at a site in northcentral Thailand beginning at 06:00 AM, very close to sunrise. **The least amount of time required for a blow fly to locate and lay eggs on a carcass was 9 hours** and during a time of no rainfall. The average air temperature during that experiment was approximately 92°F.

Dr. Anderson further supported her conclusion that insect colonization would have occurred had the remains been present during daylight by pointing out that, “the extensive wounds . . . would have made these remains extremely attractive to insects immediately after death . . .”

The claim that a wound makes a corpse more attractive to blow flies is contradicted by the scientific literature. For example, in a study comparing wounded and unwounded pig carcasses in South Africa, Kelly et al. (2011, Dr. Gail Anderson was a coauthor) reported:

“it was expected that the females [of blow flies] would be more strongly attracted to carcasses where blood and wounds were present (36). However, this was not observed in this study during any of the seasons.”

Also important for a forensic entomological analysis of this case is the lack of appropriate reference data. Judging by the scientific literature, no forensic entomological experiment has been performed in or near Las Vegas, NV, and no forensic entomological experiment duplicated

the physical setting of the location where Mr. Bailey's remains were found. In reference to this investigation, Rusch et al. (2019, the list of authors includes Dr. Jeffery Tomberlin), discussed the practical implications of such a lack of reference data.

"Although this explanation [That the lack of insects associated with the victim's remains indicated death occurred after sunset.] is certainly plausible, it is important to consider that Las Vegas, NV, USA is the #1 urban heat island in the United States (Kenward et al., 2014) and the body was found in July on concrete and surrounded by brick walls, which get much warmer than air temperature during this time of year (Myint et al., 2015). Thus, if the temperature of the materials surrounding the body, or the temperature of the body itself, was above the thermal tolerance of carrion-feeding insects, an alternative explanation for the lack of insects present is simply that it was too warm for them to be active on or around the body."

EXPERT WITNESS TESTIMONY FROM THE COURT TRANSCRIPT

DR. JEFFERY TOMBERLIN. OCTOBER 10, 2017.

Pp. 119-120

When asked, "And what is the distance that a blowfly travels to a decomposed body?" Dr. Tomberlin stated, "There is a lot of work showing blowflies can travel miles . . . to locate resources." This is a line of questioning that was repeated with other witnesses, and I interpret it as an attempt to argue, incorrectly, that under favorable environmental conditions a corpse will always be detected and infested with carrion insects because of the insects' incredible powers of olfaction.

Dr. Tomberlin did not specify a publication or author, but the scientific literature does include descriptions of experiments in which blow flies that had been marked, such as with a colored dye, were released and then recaptured miles from the release site. However, these studies provided no evidence concerning the insects' motivation for making the journey. Instead, they simply documented a distance travelled. **There are no published data that justify any statement about the distance from which a blow fly can detect the odor of a corpse and follow that odor to the body.**

One of these mark-release-recapture experiments is likely the source of testimony on this topic by Drs. Anderson and Kimsey, so I will use it to illustrate how the science may be interpreted. Braack and Retief (1986), working in South Africa, labeled thousands of flies in the genus *Chrysomya* (although they wrote "*Chrysomyia*," a spelling now considered to be incorrect) by feeding them radioactive phosphorous shortly after they emerged from the pupal stage. The radioactive flies were then released into a rural environment. Flytraps baited with decayed meat were installed at locations a variety of distances from the release point starting one week or more after the release date. Flies captured in a trap were assayed for radioactivity to identify

a fly that had moved from the release site to the trap. The maximum dispersal distance demonstrated in this way was 63.5 kilometers (39 miles) by the species *Chrysomya marginalis*. These insects were found in traps that were installed 13 days after the flies were released. Because during a substantial amount of the time after release the source of odor that eventually attracted the flies did not exist, even if these flies did detect the traps from the moment they were set up it cannot be known where the flies were at the time the traps were installed.

As noted in the previous paragraph, these observations show only that an adult blow fly traveled a certain distance across the landscape. They tell us nothing about the distance from which a blow fly will detect and then travel to a fresh corpse. Furthermore, as is usually true for an experiment such as this, the bait did not mimic a fresh corpse because it was decayed at the time the trap was set up. This is typical when trapping blow flies because fresh (undecayed) flesh is much less attractive than decayed flesh, so putrid bait is used to increase capture rate.

P. 122 (see also p. 137).

When asked how the condition of the body might impact carrion fly activity, Dr. Tomberlin stated “From a forensic perspective, if there’s blood present, that’s going to serve as an additional signal. That’s going to attract flies.”

The claim that blood makes a corpse more attractive to blow flies is contradicted by the scientific literature. In my treatment of Dr. Anderson’s report, I pointed out that this not what was observed in a South African experiment (Kelly et al. 2011). Similar negative results from Georgia, USA were reported by Munro et al. (2019). Niederegger et al. (2017), working in Germany, took the additional step of dousing pig carcasses with pig blood before exposing them in the open air. They reported that bloody carcasses were not more attractive to ovipositing blow flies compared to non-bloody carcasses.

As shown above by the quote from Rusch et al. (2019), it appears that Dr. Tomberlin has changed his opinion concerning the postmortem interval in this case.

DR. ROBERT B. KIMSEY, OCTOBER 11, 2017

P. 10-11.

Dr. Kimsey described his scientific investigations of blow flies in the Algodones Dunes region of the Mojave Desert. I presume that this is the investigation described in Kimsey et al. (2017) during which carrion insects were collected using “traps baited with carrion (chicken or rabbit parts) . . .” The publication includes a hyperlink to a UC Davis web page (accessed Feb. 1, 2021) with a list of the insect species collected, including four blow fly species.

The relevance to these data to estimating the time required for blow flies to colonize a recently killed human in Las Vegas is not clear. The Algodones Dunes are a natural habitat in contrast to urban Las Vegas. Also, the Kimsey et al. paper does not describe the time required for blow flies to visit a trap following installation, and they do not describe the condition (i.e., fresh or decayed) of the meat bait they used. Based on the text of Kimsey et al. (2017), the response of blow flies to their meat-baited traps provides no insight concerning the response of blow flies to a fresh corpse in Las Vegas because the authors did not report the time required for flies to arrive at a trap or the condition of the bait.

P. 33.

When asked if it is “an accepted principle that blow flies arrive quickly” at a corpse, Dr. Kimsey referred to this as a “major paradigm” of postmortem interval (PMI) estimation by forensic entomologists. However, there are many scientific publications describing insect-based PMI estimation logic (known as succession analysis) that does not include this assumption (Wells 2019). Also, a blanket statement that blow flies will always quickly colonize if the weather is warm and there is no barrier blocking insect access to a corpse does not take into account the published studies mentioned in the review of Dr. Anderson’s report (above).

Pp. 34-35.

When asked “how far away are blow flies able to detect dead beings?” Dr. Kimsey answered that a distance of 64 kilometers was observed as part of a South African study. I presume he had in mind the Braack and Retief (1986) paper I discussed in the context of Dr. Tomberlin’s testimony. My comments on the interpretation of that and similar scientific studies apply equally to Dr. Kimsey’s testimony.

DR. GAIL S. ANDERSON, OCTOBER 12, 2017

Pp. 30-32.

Dr. Anderson referred to observations she made on frozen, then thawed animal carcasses exposed to carrion insects at a site in Laughlin, NV. Dr. Anderson did not describe the amount of time each of these carcasses had decayed prior to freezing, i.e., they may have been decomposed at the time they were initially exposed to insects, and she did not report the length of time required for blow flies to colonize the carcasses. Therefore, it is not clear how this experience could inform her conclusions concerning the time required for blow flies to colonize a recently killed person as in this case.

Dr. Anderson also described the discovery of blow fly larvae in a bullet wound of a cougar carcass as supporting the generalization that, “blowflies would be attracted to the wound.” However, she also noted the bullet wound was in an ear, and that, “They [blow flies] will go for orifices too.”

P. 32.

Similar to Drs. Tomberlin and Kimsey, Dr. Anderson claimed that there is research showing that a blow fly can detect carrion from miles away. Her claim of a maximum known distance of almost 40 miles suggests that she referred to the results of Braack and Retief (1986). In some of her publications (e.g., Anderson 2020) she repeated that distance when discussing insect detection of a corpse, although citing the wrong source (Braack 1981, which said nothing on this subject).

As I have already explained, mark-release-recapture studies such as Braack and Retief (1986) do not tell us anything about the distance from which a blow fly can detect a corpse.

P. 33.

Dr. Anderson states that blow flies will colonize carrion “immediately” during daylight. I have already reviewed published studies describing exceptions to this generalization.

P. 50.

When reviewing photographs of the scene, Dr. Anderson hypothesizes that the victim would have been especially attractive to flies because of the amount of blood present. As I have already discussed, published experiments, including one by Dr. Anderson (Kelly et al. 2011), found that blood had no such effect on how flies respond to a body.

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Response to reports by plaintiff expert witnesses, Lobato v. LVMPD (case no. 2:19-CV-1273)

Jeffrey D. Wells, Ph.D., February 21, 2021

At the request of Mr. Craig R. Anderson, I reviewed a report by Dr. Andrew M. Baker dated January 12, 2021, and a report by Dr. Jeffery K. Tomberlin dated February 4, 2021. Like Dr. Tomberlin, I am a forensic entomologist. Although Dr. Baker is a forensic pathologist, according to his report Dr. Baker's conclusions were profoundly influenced by the forensic entomological experts for the defense in *The State of Nevada v. Kirstin Blaise Lobato* (case no. C-01-177394).

Section II of Dr. Tomberlin's report includes several generalizations about blow fly behavior. These are presented as reasons to believe that blow flies would have quickly located and deposited eggs on Duran Bailey's corpse if the remains had been at the site where they were found during the daylight hours prior to discovery of the body. In my report of February 8, 2021, I explained that these aspects of fly biology are not universal, and therefore why it is unwarranted to always assume that blow flies will quickly find a corpse when the environmental conditions are apparently favorable and there is apparently nothing preventing insect access. More particularly, given this natural variation in carrion fly behavior, one cannot reliably extrapolate from observations of insects in other geographic regions to Las Vegas, a location for which no forensic entomological research has been published.

In his court testimony of October 10, 2017, Dr. Tomberlin stated that Mr. Bailey's death had occurred "most likely not until after dark" during the evening of July 8, 2001. This was the conclusion of all of the defense forensic entomological written opinions and court testimony in *Nevada v. Lobato* that I have seen (see my report of February 8, 2021). In his report Dr. Baker described those entomological analyses as the sort of "compelling data" that persuade a forensic pathologist to modify her or his conclusions, in Dr. Baker's case from a scenario in which Mr. Bailey's remains could have been at the site of discovery as early as before 10:00 AM on July 8, 2001, to one in which the remains could not have been present during daylight hours.

However, despite what may be the appearance of professional consensus indicated by the uniformity of opinions offered by forensic entomologists for the defense in *Nevada v. Lobato*, that uniformity no longer exists. The written record documents the evolution of Dr. Tomberlin's views concerning what one can reasonably conclude about how insects would have responded to Mr. Bailey's remains, and therefore, given the lack of insects on the body, how long the remains could have been at the site prior to discovery. In his report of February 4, 2021, Dr. Tomberlin (section III) concluded that Mr. Baily's remains could not have been at the site of discovery during the entire daylight period of July 8, 2001. Dr. Tomberlin also stated that he offered the same conclusion during his testimony in court. This is an accurate description. If Mr. Bailey's corpse was not at the site during any portion of the daylight period then of course it was not present during the entire daylight period, but the report conclusion is much less certain compared to Dr. Tomberlin's sworn testimony.

A more significant change in Dr. Tomberlin's views was described in a scientific publication (Rusch et al. 2019, see my February 8, 2021 report). In it, Dr. Tomberlin characterized his original conclusion as "plausible" rather than "most likely." He also presented an alternative hypothesis as one that could not be excluded, namely that it might have been too hot for carrion insect activity at the body. **The implication of being unable to choose between these alternatives is that the absence of insects on or near Mr. Bailey's corpse cannot be interpreted.** A forensic entomological estimate of postmortem interval is simply not possible in this case.